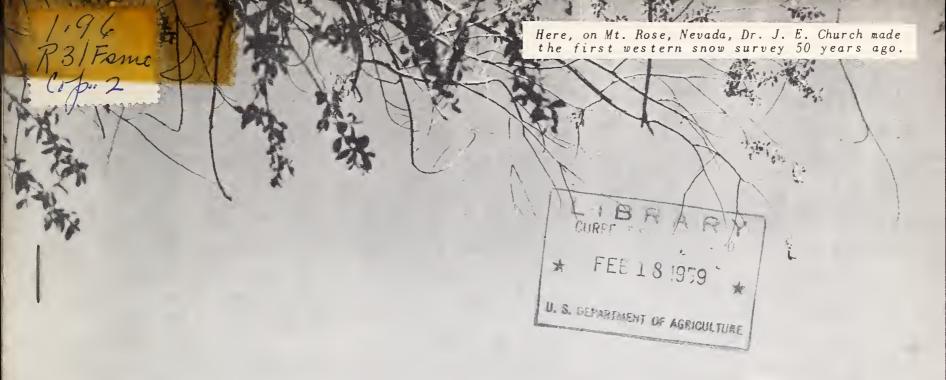
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FEDERAL - STATE - PRIVATE COOPERATIVE SNOW SURVEY and WATER SUPPLY FORECASTS for

MONTANA & NORTHERN WYOMING

UNITED STATES DEPARTMENT of AGRICULTURE...SOIL CONSERVATION SERVICE.

and

MONTANA AGRICULTURAL EXPERIMENT STATION

In cooperation with the U.S. Forest Service, U.S. Geological Survey, National Park Service, U.S. Bureau of Reclamation, State Engineers of Montana and Wyoming and other Federal, State and private organizations.

FEB. 1, 1959

UNITED STATES DEPARTMENT OF AGRICULTURE - SOIL CONSERVATION SERVICE

TO RECIPIENTS OF COOPERATIVE SNOW SURVEY AND WATER SUPPLY FORECAST REPORTS:

The climate of the cultivated and populated areas of the West is characterized by relatively dry summer months. Such precipitation as occurs falls mostly in the winter and early spring months when it is of little immediate benefit to growing crops. Fortunately, most of this precipitation falls as mountain snow which stays on the ground for months, melting later to sustain streamflow during the period of greatest demand during late spring and summer. Thus, nature provides in mountain snow an imposing water storage facility.

The amount of water stored in mountain snow varies from place to place as well as from year to year and accordingly, so does the runoff of the streams. The best seasonal management of variable western water supplies results from fore-knowledge of the runoff.

A snow survey consists of a series of about ten samples taken with specially designed snow sampling equipment along a permanently marked line, about 1000 feet in length, called a snow course. The use of snow sampling equipment provides snow depth and water equivalent values for each sampling point. The average of these values is reported as the snow survey measurement for a snow course.

Snow surveys are made monthly or semi-monthly beginning in January or February and continue through the snow season until April, May or June. Currently more than 1300 western snow courses are measured each year. These measurements furnish the key data for water supply forecasts.

By relating snow survey measurements taken over a period of years to spring-summer runoff during the same period, relationships have been developed which make it possible to forecast seasonal runoff several months in advance of occurrence. In order to make a forecast, once a forecast relationship has been developed, the maximum snow water content at previously selected key snow courses is usually entered in the forecast relationship. More accurate forecasts are often obtained when other factors such as soil moisture, base flow and spring precipitation are considered and included in the forecast relationships.

Listed below are the Federal-State-Private Cooperative Snow Survey and Water Supply Forecast reports available for the West which contain detailed information on snow survey measurements, streamflow forecasts, reservoir storage, soil moisture and other guide data to water management and conservation decisions.

PUBLISHED BY SOIL CONSERVATION SERVICE

REPORTS RIVER BASINS	ISSUED	COOPERATING WITH	LOCATION
	MONTHLY (FEBMAY)	COLO. EXP. STATION	
COLUMBIA Includes Alaska	MONTHLY (JANMAY)		BOISE, IDAHO
UPPER MISSOURI	MONTHLY (FEB MAY)	MONT.AGR.EXP.STATION	BOZEMAN, MONTANA
WEST-WIDE	(OCT. 1, APR. 1 AND MAY 1)	COOPERATORS	PortLand, Oregon
STATES			
ARIZONA		SALT R. VALLEY WATER	
NE VADA	MONTHLY (FEB APR.)	NEVADA STATE ENGINEER	RENO, NEVADA
ORE GON	MONTHLY (JANMAY)	ORE.AGR.EXP.STATION	PORTLAND, OREGON
UTAH	Monthly (JanMay)	UTAH STATE ENGINEERUTAH AGR.EXP.STATION	SALT LAKE CITY, UTAH
Washington	MONTHLY (FEBMAY)	Wash. State Dept. OF Conservation	SPOKANE, WASHINGTON
WYOMING	Monthly (Feb. June)		CASPER, WYOMING

Copies of the various reports may be secured from:

Head, Water Supply Forecasting Section Soil Conservation Service 209 S.W. 5th Avenue, Portland 4, Oregon

PUBLISHED BY OTHER AGENCIES

OTI	HER SNOW SURVEY REPORTS		
	BRITISH COLUMBIA MONTHLY	ATER RIGHTS BR., DEPT. ARLIAMENT BLDGS. VICTO	
	CaliforniaMonthly	DEPARTMENT OF WATER R	ESOURCES,

FEDERAL-STATE-PRIVATE COOPERATIVE

SNOW SURVEYS and WATER SUPPLY FORECASTS

for

MONTANA AND NORTHERN WYOMING

(Upper Missouri and Upper Columbia River Basins)

Report Prepared by:

A. R. Codd Hydraulic Engineer Soil Conservation Service

Soil Conservation Service
U. S. Department of Agriculture
and
Montana Agricultural Experiment Station
Bozeman, Montana

Report Issued by:

H. D. Hurd State Conservationist of Montana

O. W. Monson
Irrigation Engineer
Montana Agricultural
Experiment Station

R. E. Huffman
Director
Montana Agricultural
Experiment Station



WATER SUPPLY OUTLOOK FOR MONTANA February 1, 1959

MISSOURI RIVER BASIN

JEFFERSON RIVER

Snow-Survey courses measured on the southern watershed of the Beaverhead reflect apparent drought conditions in eastern Idaho. The snow-pack on the Beaverhead is 56 percent average. Farther north on the Big Hole River basin the snow-pack is close to 90 percent average. These conditions are very similar to last season.

MADISON RIVER

The 1959 February snow-pack on the Madison River is less percentage-wise than on the Beaverhead. The seven snow-survey courses measured on the Madison indicate only 72 percent average. This condition is only 3 percent less than February 1958.

GALLATIN RIVER

The 1959 February snow-survey measurements indicate an excellent water supply from this river. These courses show the snow-pack to be 105 percent of last year and 103 percent of the 1938-52 average.

MISSOURI RIVER MAIN STEM

Tributary basins entering the Missouri River from Toston to Fort Benton have a snow-pack 12 percent above last year and 96 percent average.

All indications point to a GOOD water supply from the snow-pack in the mountains for the 1959 season.



COLUMBIA RIVER BASIN

FLATHEAD RIVER

The 1959 February snow-pack on the South Fork and Middle Fork of the Flathead River is 140 percent of last year and 120 percent average. February indications are very good and should insure an adequate water supply for the 1959 season.

On the Clark Fork Basin the February snow-pack is 104 percent of last season and 105 percent average. This February snow-pack should produce a GOOD water supply.

KOOTENAI RIVER

Snow-Survey measurements furnished by the Division of Water Rights in British Columbia indicate that there is an adequate snow-pack on the Upper Kootenai River. Measurements show the February snow-pack to be 106 percent of last season and 99 percent of the 1938-52 average.





INDEX TO MONTANA & NORTHERN WYOMING SNOW COURSES

						IN	DEX	TO 1	MONTAN	Α δ	i N(HŁ	KN	AA I	OIATITA	0, 2-				Locati Sec.	on	Range	Record	Measuring	Measured
Double of Double			Loca		9.		M	Managed	Drainage Basin	Kontana		Locat	ion	Range		Measuring Dates	Measured By	Drainage Basin and Course Name	Montana Number	Elev.	Lat.	Twp.	Long.	Began	Dates	Ву
Drainage Basin and Course Name	Montana Number	Elev.		Tup.			Measuring Dates	Measured By	and Course Hame	Number	Elev. MISSOURI		Twp.		Began			(TONGUE RIVER	cont.)	MISSOURI	RIVER					
JEFFERSON RIVER (ROCK-BEAVER	HPAD)	MISS	OURI RI	TER DHAIN	AGE				(UPPER TELLOW	STONE)	71330014	10.12						Borse Trail Div.	7E19	9200	29 7	55N 52N	90W 86W	1956 1956	2,3,4,5 2,3,4,5	1
Lakeview Ridge	11E3	7400	27	IJ"S	2W	1948	3,4,5	10	Camp Senia	901	7890	2 1/1 • - 1/1	8s	183 110°-30	1937 0: 1938	1,2,3,4,5	6	Lake Geneva North Tongue	7E16 7E15	9000 8800 8000	17 10	55N 55N	89W 88W	1956 1956	2,3,4,5	1
Lakeview Canyon Limekiln	11E4 12E2	6930 6950	26 5	عبلا 158	2M 5M	1948 1948	3,4,5 3,4	10	Canyon Cooks City	10E3 10D7 10D5	7750 7400 8400	25	9S 9S	14B 9B	1937 1935	1,2,3,4,5 3,4 3,4	2	Sibley Lake Sucker Creek	7E11 7E12 7E10	9000 7500	19 32	55N 56N	87₩ 87₩	1956 1956	2,3,4,5 2,3,4,5	1
White Pine Ridge (HORSE PRAIR	12E1	8850	18	2بل3	9W	1948	3,4	1	Crevice Mt. Independence Lake Camp	10D6 10E4	8000 7850	22 بالا • عليا		110°-21	1960 4: 1936 7: 1938	1,2,3,4,5	6	Steamboat Point Wood Rock O.S.	7E13	8500	3	54N	88W	1956	2,3,4,5	1
Bleody Dick	13010	7600	12	83	16W	1948	3,4	1	Lupine Creek Lodgepole	10E1 9E1	7300 8200	ىلىك5لىل 32	56N	110°-37	1940	2,3,4,5	T,4	(POWDER RIVER)	Wyoming		,	1. eta r	8LN	1956	2.1.5	
Gold Stone Lemhi Page Terrell Creek	13D9 13E1	8100 7460	11 9	83 103	16W 15W	1948 1948	3,և 3,և	1	(SHIELDS RIVE	<u>R</u>)						2.1.	1	Crazy Woman Muddy Creek O.S.	6E2 6E1	8200 7800	6 2 11	47N 48N 48N	84N 85W	1956 1950	2,3,4,5 2,3,4,5 2,3,4,5	1
Trail Creek Selway Junction	13D12 13E2 13D11	6650 7090 6800	14 15 27	93 103 83	15W 15W 15W	1948 1948 1948	3,4 3,4 3,4	1	Porcupine	1003	6500	10	ĻΝ	108	1938	با _و 3	-	Munkere Pase North Powder #2	7E8 7E36 7E27	9700 8300 8100	20 31	47N 48N	85W 85W	1956 1956	2,3,4,5	1
(BIG HOLE)					->"	=/4-	,,4		LOWER YELLOWSTONE									Onion Gulch Soldier Park Sour Dough	7E5 7E6	8700 8500	36 17	52.N 49N	85W	1950 1936	2,3,4,5	1
Rig Nole Pass Big Hole Pass-Be.	1303 1304	7240 6900	28 2h	38 38	18W 18W	1948 1948	3,4	1	(WIND RIVER)	nyoming 9F12	0088	36	42N	109₩	1955	2,3,4,5	1	Sour bough	, -	COI	UMBIA RI	VER BASI	N			
East Boundary Oibbons Pass	1305 1302	6700 7100	22 h	33 23	17W 19W	1948 1934	3,4 3,4 1,2,3,4,5	1,3	Brooke Lake #3 Burroughs Creek	10F8 9F4	9200 8800	23 15	441N 43N	110W 107W	1939 1948	2,3,4,5 2,3,4,5 2,3,4,5	1	KOOTENAI RIVER								
Jahnke Creek Miner Forks	1308	7340 7300	25 24	7 3 63	16W 17W	19կ8 19կ8	3,4 3,4	1	Dinwoodie Dry Creek	9F10 9F9	10000 9500	21 34	39N ЦИ	105W 6W 108W	1948 1948 1940	2,3,4,5	1	Baree Creek	15B11	5500 6000	6	25N 25N	30W 31W	1956 1937	4,5,5	2 2
Miner Lake	1307	6720	10	63	16W	1945	3,4,5	1	DuNoir East Fork	9 1 6 9 11 3 9 17	8750 9200 8500	27 23 12	իր» Իրո	104W 108W	1956 1948	2,3,4,5	1	Red Mountain	1581 15A1 14A7	6000 5450	Î. 8	36N 37N	29W 24W	193 7 1955	3,4,5,5 4,5,5	1,2
(WISE RIVER) Anderson Mdw.	13014	7000	18	35	12W	1948	3,4	1	Geyeer Creek Little Warm Sheridan B.S. #1	9 F 8	9500 7500	24	41N 42N	108W 109W	1948 1939	2,3,4,5	1	Weasel Divide FLATHEAD RIVER	Ida	747-						-,-
Elk Norn Wies River	13015 13D13	8450 6300	15 15	4S 2S	12W 12W	1935 1948	3,4,5 3,4	3	Sheridan R.S. #2 T-Gross Ranch	9F14 9F3	7500 8000	3	42N 43N	109W 107W	1955 1940	2,3,4,5	1	Basin Creek Big Creek	13B14A 13B3	5000 6750	11 6&7	19N 22N	12W 18W	1951 1941	2,3,4,5 3,4,5	2 5
(MUBY RIVER)									Togwotee Pase	10F9	9600	29	Lili N	110W	1936	2,3,4,5		Brush Creek Cattle Queen	1)4A);	5000 4700	13	30N 35N	26W 17W	1937 1939	3,4,5	1,2
Flachlight	1203	6950	22	83	7W	1945	3,4,5	1	(POPO AGIE RIV	ER) Wyom 802	9500	23	31N	101W	1939	2,3,4,5	1	Decert Mountain Hell Roaring Div.	13A2M 14A3	5600 5770	24 35 18	31N 32N 21N	19W 22W 13W	1937 1942 1951	1,2,3,4,5 3,4,5 1,2,3,4,5	1,2 1,2
MADISON RIVER									Bruce'e Camp Hobb'e Pork	805 903	6500 10000	24 22	32N 2S	101W 3W	1955 1948	2,3,4,5	1	Holbrook Kishenehn	13B13A 14A6 14A5	4530 3886 4300	1); 34	37N 30N	22W 2LW	1954	4,5	6
Nebgen West Yellowstone	11E5 11E7	6550 6700	22 34	11S 13S	3E SE	1934 1934	1,2,3,4,5	3	Mosquito Park B.S. Sawmill Olade	801	9500 8500	23	2S 31N 30N	3W 101W 101W	1940 1939 1939	2,3,4,5 2,3,4,5 2,3,4,5	1	Logan Creek Marias Pase Mineral Creek	13A5M 13A16	5250 4000	34 29	30N 35N	11/W 17W	1934 1957	1,2,3,4,5	3
Norrie Baein	10E2	7500	րր _թ րր ,	130	1100-421	1936	1,2,3,4,5 3,4	6	South Pase St. Lawrence Trout Creek	803 9 F11 902	9000 9000 8400	13 26 5	1N 2S	7A 7A	1940 1948	2,3,4,5	1	Quintonkon Spotted Bear Mt.	13A13 13B2M	3800 7000	11 23	26N 25N	17W 15W	1951 1948	2,3,4,5 3,4,5	1,2 1,2
									(OWL CREEK) Wy									Strawberry Lake Trinkus Lake	13A10 13BL	6500 6500	11 9	28N 25N	19W 17W	1948 1948	3,4,5 3,4,5	2
OALLATIN RIVER									Beavere Mill Owl Creek	9F2 8F1	8900 8 70 0	6 36	43N 43N	101W	1948 1948	2,3,4,5 2,3,4,5	1	Trout Lake Twin Creeks	13A12M 13B11 13B5	3600 3580 7000	21 14 28	28N 26N 20N	17W 16W 16W	1948 1951 1948	3,4,5 2,3,4,5	1,2
Devil's Slide Rood Mendow	10D4 10D3	8100 6600	14 22	53 48	6E 6E	1935 1935	2,3,4,5	2,1	(GREYBULL RIVE	R) Wyoning	:							Upper Holland Lk.	1,005	1000	20	2011	104	1740	3,4,5	2
New World 21-Mile	1001 11E6	6700 7150	24 1	3S 113	6E 5E	1939 1934	2,3,4,5 1,2,3,4,5 1,2,3,4,5	7	Timber Creek #1 Timber Creek #2	9E2 9E3	8800 8800	25- 25	47N 47N	103W 103W	1948 1955	2,3,4,5 2,3,4,5	1	Baree Creek Baree Mountain	15B11 15B1	5500 6000	6	25N 25N	30W 31W	1956 1937	4,5,5	
MISSOURI RIVER MAI	N STEM								Wood River #1 Wood River #2	9F1 9F15	8000 8000	28 28	46N 46N	103W 103W	1939 1956	2,3,4,5	1	Coyote Hill El Dorado Mine	13B10 13C9	4200 7800	12 23	18N 8N	16W 12W	1952 1949	1,2,3,4,5	2
Obecaman Reservoir		6200	2	8N	5W	1936	1,2,3,4,5	3	(SHOSHONE RIVE	R) Wyomine								Free zeout Summit	13C11 15B10	8000 6800	12 21	6N 15N	13W 27W	1957 1937	3,4,5 4,5	1 2
Orystal Lake Grasshopper	901 1002	6100 7000	19 19	12N 9N	18E 8E	1941	3,4 3,4	1,2 2	East Entrance Sylven Pass	10E6 10E5	7000 7100	17 12	52N 52N	109W 110W	1948 1936	1,2,3,4,5	6	Gold Creek Lk. Hoodoo Creek Intergaard	13010 1501 130h	7200 6200 6450	14 9 6	9N 14N 5N	12W 27W 13W	1949 1937 1936	4,5	2
Kinge Hill Pionie Grounde Pipestone Pase	1001 1206 1201	7950 6500 7200	35 10 11	13N 5N 1N	78 6W 7W	1934 1941 1938	3,4,5 2,3,4	3	(NOWOOD CREEK)	Wyoming						-,-,-,-,-		Lubrecht Forest #6		1400 6330	11	14N 17N	15W 17W	1951	2,3,4 1,2,3,4,5 3,4,5	12
Stemple Pass Ten Milo Oreek L	12C1 12C2	6900 6250	16 13	13N 8N	7W 6W	1934 1935	2,3,4,5 3,4,5 1,2,3,4,5	3	Cold Springs Camp Medicine Lodge Lks	7£25 7£24	8700 9500	1	50N 51N	88W 87W	1956	2,3,4,5	1	Pipestone Pass	1201	7200	10	lN	7W	1938	2,3,4,5	1
Ten Mile Creek M Ten Mile Oreek U	1203 120կ	6800 8000	13 19	8n 8n	6W 5W	1934	1,2,3,4,5	3 3	Munkers Pase North Powder	7E8 7E36	9700 9700 8300	11 20	48N 47N	85W 85W	1956 1950 1956	2,3,4,5	1	Red Lion Slide Rock Mt.	13012 1302	7000 7100	27 35	6N 10N	13W 16W	1958 193 7	3,4,5	1
(TETON RIVER)									Onion Gulch Tensleep Lake	7E27 7E26	8100 9075	31 33	L8N SON	85W 86W	1956 1956	2,3,4,5 2,3,4,5 2,3,4,5	1	Soutbern Croes Stemple Pase	1305	6500 6900	8 16	5N 13N	13W 7W	1936 1934	2,3,4 3,4,5	4
Freight Creek Waldron Creek	12 A 1 12B2	6000 5600	13 16	26N 25N	10W 9W	1948 1948	3,4 3,4	1	Tensleep R.S. Tyroll R.S.	7E7 7E35	8300 8300	30 30	49N 49N	86W 86W	1935 1956	2,3,4,5	î	Storm Lake Stuart Mill Stuart Mountain	1307 1306 1301	7780 6500	19 19	4N 5N	13W 13W	1939 1936	2,3,4 2,3,4	1
West Fork	12B1	6000	6	25N	9W	1948	3,4	î	(SHELL CREEK)	Woming								TV Mountain BITTERFOOT RIVER	14B1	7400 6800	6 33	11/M 15N	18W 19W	1936 1956	1,2,3,4,5	1,2
(SUN RIVER) Benchmark	1288	5500	0	20N	low	201.0	2.1		Bald Mountain Beaver-Tongue Div.		9600 9200	33 12	56N 55N	91W 91W	1956 1956	2,3,4,5	1	East Fork R.S. Cibbons Pass	13D1 13D2	5400 7100	16 Ա	2N 2S	17W 19W	1937 1934	1 2 2 1 5	1
Cabin Creek 5-Bull	12B6 12B9	5400 5600	33 36	23N 20N	10W 10W	1948 1949 1948	3,4 3,4 3,1,	1 1,2 1,2	Bone-Spring Div. Granite Creek Camp Granite Page		9200 7800	32 15	55N 53N	89W 89W	1956 1956	2,3,4,5 2,3,4,5 2,3,4,5	1	Lolo Pass Nez Perce Camp	14C5 14D2	5230 5580	16 19&20	38N	15E 23W	1956 1937	1,2,3,4,5 3,4,5,5 3,4,5	3,1 2 1
Goat Mountain	12B5 12B7	5300 7000	31 20	25M 57M	10W 10W	1949 1934	3,4 3,4 3,4 3,4	1,2	Borse-Trail Div. Ranger Creek	7517 7519 754	8950 9200 8800	19 29	54N 55N	90W	1956 1956	2,3,4,5	1	Nez Perce Pass Powell R.S. Skalkaho Summit	14D1 14C6	6575 4230	32 33	28 N 37N	17E 14E	1937 1956	1,2,3,4,4½, 3,4,5,9	
Wrong Ridge Wrong Creek	12B3 12B4	6800 5700	17 32	25N 25N	10W 10W	1949 1949	3 չև 3 չև	1,2	Shell Creek	7E23	9600	32 12	53N 52N	88W 88W	1935 1956	2,3,4,5	1	Skarkano Summe	1303	7259	30	6N	17W	1937	4	1
(MARIAS RIVER)								(PORCUPINE CRE		3							ST. MARY RIVER		SA	SKATCHEW	AN RIVER	BASIN			
Harias Pass	13A5H	5250	34:	30N	14W	1934	1,2,3,4,5	3	Five Spge. Palls Medicine Wheel	7E31 7E30	7500 9000	19 24	56N 56N	92W 92W	1956 1956	2,3,4,5	1	Iceberg Lake #3	13A3	5600	48°-50'		1130 124	1000		
(MILK RIVER) Rocky Boy	941	5200	15	28N	165	201.2	2.1	_	(TONOUE RIVER)							-1-1417	•	Josephine Upper Josephine Lower #9	13A15 13A14	5000 4900	480-50		1130-43 ! 1130-42 ! 1130-41 !	1956	5 5	3,9
(MUSSELSHELL R		7200	2.9	2014	168	1941	3,4	7	Beaver Tongue Div. Big Goose #1	7E2	9200 7700	12 4	55N 53N	91W 86W	1956	2,3,4,5	T.	Mount Allen #7 Piegan #6 Ptarmigan #8	13A7 13A6	5700 5500	780-79		113°-41' 113°-414	1922	5 5	3,9 3,9
Grasshopper	1003	7000	19	9N	88	1938	بار3	2	Big Goose #2 Bone-Spring Div. Burgess R.S. #1	7832 7818	7700 9200	1 ₄ 32	53N 55N	86W 89W	1935 1955 1956	2,3,4,5 2,3,4,5 2,3,6,5	1	Post II,0	13A8	5800	480-50		1130-441	1937	Ś	3,9
									Burgess R.S. #2 Dome Lake #1	751 7533 753	7900 7900 8800	36 36 11	56N 56N	89W 89W	1950 1955	2,3,4,5 2,3,4,5 2,3,4,5	1 1	a. Numerals 1,2,3	4 and 5	refem +-	Yours					
									Dome Lake #2 Cloca Creek Granite Pass	7E34 7E34	8800 9300	11 32	53N 53N 55N	87W 87W 87W	1950 1950	2,3,4,5 2,3,4,5	i	b. Numerals refer	to Agency	y that so	Cures +r	rebru	ary 1, M	arch 1, A	April 1 and P	May 1.
									- WILL VC TASS	7E17	8950	19	54N	88W	1956 1956	2,3,4,5 2,3,4,5	1	2. U. S. Forest C	ion Service	Ce	00 011	- BHOW S	_		periment Sta	tion
Ange equitocate diss 1888																		4. Montana Power	al Survey				8. C:	ity of Bo	periment Sta zeman Mater & Power	
																		5. U. S. Indian S 6. National Park			Soil Mo		10. U.	. S. Fish	and Wildlif	e Service ation
																				A ~	Aerial :	Marker	12. M	ontana St	ate Forestry	School
																								5.R-11	164 59M-4	D= 11 1)

^{5,}R-11,484 59M-46-3(3)

COMPARISON OF SNOW COVER WITH THAT OF PREVIOUS YEARS

Summary of Snow-Survey Data by Tributary Watersheds February 1, 1959

TRIBUTARY BASINS	No. of Courses Averaged	No. Years Used			r Equivalent ercent of Average
:					
	MISSOURI RIVER E	ASIN IN	MONTANA		
JEFFERSON RIVER	14	15	96	91	86
MADISON RIVER	7	9-15	97	67	72
GALLATIN RIVER	14	5-15	105	106	103
MISSOURI MAIN STEM	5	15	112	128	96
UPPER YELLOWSTONE	6	11-15	120	92	85
	COLUMBIA RIVER B	ASTN TN	MONIT ANT A		
KOOTENAI RIVER ABOVE LIBBY	6	8-15	106	98	99
FLATHEAD RIVER	8	8-15	140	145	121
UPPER CLARK FORK	15	7-15	104	115	105



					SNOW C	OVER M	EASUREN	ŒNTS	
MISSOURI				1959			ast Rec		Total
DRAINAGE BASIN			Date	Snow	Water		Conter		Years
AND SNOW COURSE	No.	Elev.	of Survey	Depth (In.)	Content (In.)	1958	1957	15-Year Average 1938-52	of Record
JEFFERSON RIVER									
(Rock-Beaverhead) #Camp Creek #Kilgore (Big Hole)	12E3 11E12	6800 6200	1/30 2/1	19 21	3.9 3.6	- 5.0	- 7.2	6.4 7.3	21 22
Gibbons Pass #Moose Creek Storm Lake #2	13D2 13D16 13C7	7100 6200 7780	1/30 1/28 2/3	55 43 36	14.2 10.3 8.8	14.4	14.8 11.2 7.6	15.2* 11.8** 8.4**	19 13 6
MADISON RIVER							Parallel Control of the Control of t		
Hebgen Norris Basin 21-Mile W. Yellowstone #Big Springs #Island Park #Valley View	11E5 10E2 11E6 11E7 11E9 11E10 11E8	6550 7500 7150 6700 6500 3600 6500	1/31 1/29 2/1 1/31 1/31 2/1 1/31	30 29 38 26 45 35 32	6.2 5.4 8.8 5.0 10.8 6.8	5.9 5.3 8.6 4.2 10.8 9.7 6.5	10.0 6.6 13.5 9.1 14.5 10.4 10.5	7.6 7.5** 11.4 8.0 12.8 10.1 9.7**	24 9 21 21 23 23 13
GALLATIN RIVER							1		
Devil's Slide Hood Meadow New World 21-Mile	10Dl ₄ 10D3 10D1 11E6	8100 6600 6700 7150	1/31 2/1 2/24 2/1	55 27 26 38	14.6 6.6 6.4 8.8	12.6 7.3 6.2 8.6	5.4 13.5	12.0** 5.1** 6.8** 11.4	5 11 21
MISSOURI RIVER MAI	N STEM						E + Followers Industrial Trans.		
Chessman Res. Picnic Grounds Pipestone Pass Tenmile, Lower Tenmile, Middle Tenmile, Upper	1205 1306 12D1 1202 1203 1204	6200 6500 7200 6250 6800 8000	1/29 2/2 2/2 2/1 2/1 1/31	11 12 20 32 40	2.3 1.7 2.2 4.6 7.8 10.6	2.3 2.4 3.2 3.9 6.4 8.2	1.2 3.8 3.2 4.4 5.8 7.7	3.3 3.4** 2.9* 4.8 7.0 8.8	23 14 19 23 24 24
(Marias River) Marias Pass	13 A 5	5250	1/30	52	14.6	10.8	12.2	11.8	24
UPPER YELLOWSTONE									_ 1
Canyon Cooke City Lake Camp Lodgepole, Wyo. Lupine #Aster Creek #Thumb Divide	10E3 10D7 10E4 9E1 10E1 10E8	7750 7400 7850 8200 7300 7700	2/1 1/31 2/1 1/30 1/29	42 26 30 31 30	9.8 5.0 5.7 6.8 6.6	7.7 4.6 4.5 5.4 4.4 16.4	10.0 5.8 6.0 7.5 8.2 19.0 12.8	9.8** 6.1** 6.7** 8.5** 7.2* 16.5 15.8**	14 12 13 3 16 39 11
#Thumb Divide	10E7	7900	1/21	42	12.0	1	12.0	1)•UAX	<u> </u>

^{*} Less than 15 years in 1938-52 period. Average for 15 years nearest the base period.

^{**} Average for period of record.
Adjacent Basin.



MISSOURI					NIT HALL 1 '7				
MI DOUUD.I				1959	DIACAA C		EASUREN		M-4-7
DRAINAGE BASIN			Date	Snow	Water		ast Rec	nt (In.)	Total
AND			of		Content	Water	TOULTEEL	15-Year	Years of
SNOW COURSE	No.	Elev.	Survey	(In.)		1958	1957	Average 1938-52	Record
LOWER YELLOWSTONE	(Wind R	iver)				in the state of th			
Big Warm	9F12	8800	1/22	23	4.7	3.7	5.3	_	4
Brooks Lake	10F8	9200	•		Use Togw				4
Burroughs Creek	9F4	8800	1/26	40	10.4	6.1	7.3	11.0**	10
Dinwoodie	9F10	10000	1/27	27	6.3	6.0	6.7	8.6**	10
Dinwoodie Glacier	A	10500	1/30	27	6.3	_	-	_	_
Dry Creek	9 F 9	9500	1/27	18	3.9	2.8	3.5	4.6**	10
DuNoir	9 F 6	8750	1/22	21	4.3	2.7	4.5	6.3*	17
Geyser Creek	9 F 7	8500	1/23	17	4.2	2.3	4.2	5.5**	10
Little Warm	9F8	9500	1/23	38	10.1	7.5	9.3	11.9**	9
Sheridan R.S. #2	9F14	7500	1/22	17	3.3	2.9	4.2	-	4
T-Cross Ranch	9F3	8000	1/26	22	4.4	3.5	5.2	5.0%	18
Togwotee Pass	10F9	9600	1/29	75	20.9	15.1	16.9	19.2	23
Twenty Lakes	A	10500	1/30	12	2.0	_	_		
LOWER YELLOWSTONE	(Popo A	gie Rive					With the control of t		
Blue Ridge	8G2	9500	2/2	21	4.5	5.5	6.0	8.2*	17
Bruce's Camp	8 G 5	6500	2/3	11	2.1	1.6	0.6	-	3
Hobbs Park	9G3	10000	1/29	33	6.9	7.0	10.6	12.5**	10
Mosquito Park R.S.		9500	1/29	18	2.8	3.3	4.2	5.4*	15
Sawmill Glade	8Gl	8500	2/2	19	3.2	4.8	4.1	5.2*	17
South Pass	8G3	9000	2/3	26	5.0	7.1	9.0	9.8*	17
St. Lawrence R.S.	9Fll	9000	1/28	12	2.0	2.0	3.6	4.6*	15
Trout Creek	9G2	8400	1/29	20	2.9	3.2	3.6	3.5**	10
LOWER YELLOWSTONE	(Owl Cr	eek)	<u> </u>				The second secon		
Beavers Mill	9 F2	8900	1/30	22	5.0	2.2	3.2	5.0**	10
Owl Creek	9F2 8F1	8700	1/30	17	2.9	2.4	2.2	3.7**	10
LOWER YELLOWSTONE			· · · · · · · · · · · · · · · · · · ·		2.,		District of the second of the		
	(== = = = = = = = = = = = = = = = = =		,				The state of the s		
Timber Creek #2	9 E 3	8800	1/28	7	1.3	2.1	2.0	1.9**/	7
Wood River #2	9Fl	8000	1/29	16	3.2	3.4	2.6	-	4
							and the same of th		
							Company of the state of the sta		

^{*} Less than 15 years in 1938-52 period. Average for 15 years nearest the base period.

^{**} Average for period of record.

[/]Timber Creek #1 abandoned. Timber Creek #2 average obtained from relationship of old and new courses.



N/TOGOTTO T				7050	SNOW C				m , 7
MISSOURI DRAINAGE BASIN			Date	1959 Snow	Water		ast Red Conter		Total Years
AND SNOW COURSE	No.	Elev.	of Survey		Content		1957	15-Year Average 1938-52	of Record
LOWER YELLOWSTONE (S	Shoshon	e River	•)						
#Carter Mt. East Entrance Sylvan Pass Togwotee Pass	9E4 10E6 10E5 10F9	7800 7000 7100 9600	1/28 1/30 1/30 1/29	9 32 39 75	1.4 7.3 9.6 20.9	3.1 7.3 8.1 15.1	4.0 8.9 10.1 16.9	8.7** 10.2* 19.2	2 10 15 23
LOWER YELLOWSTONE (N	lowood	Creek)							
Cold Springs Camp Medicine Lodge Lks. Munkres Pass Onion Gulch Tensleep Lake Tensleep R.S. Tyrell R.S.	7E25 7E24 7E8 7E27 7E26 7E7 7E35	8700 9500 9700 8100 9075 8300 8300	1/27 1/27 2/1 2/1 1/31 1/31	27 37 33 31 38 31 31	6.5 9.2 8.8 7.6 9.1 7.5 7.7	4.0 6.6 5.4 5.0 6.7 N.R 4.8	4.8 7.2 6.0 6.4 4.9 4.6	-	3 4 3 3 1 3
LOWER YELLOWSTONE (S	Shell C	reek)							
Bald Mountain Beaver-Tongue Div. Bone-Spring Div. Granite Cr. Camp Granite Pass Ranger Creek Shell Creek	7E4	9600 9200 9200 7800 8950 8800 9600		58 50 21 47 35 43	17.3 17.3 13.4 4.1 12.9 7.8 11.3	8.4 7.8 7.7 2.8 7.4 4.8 7.5	11.8 11.2 9.9 3.8 10.2 6.5 10.0	-	3 3 3 3 3 3 3
LOWER YELLOWSTONE (F	Porcupi	ne Cree	ek)						
Five-Springs Falls Medicine Wheel		7500 9000	1/30 1/27	33 53	8.5	2.4	2.6	-	3

^{*} Less than 15 years in 1938-52 period. Average for 15 years nearest the base period.
** Average for period of record.
Adjacent Basin.



MISSOURI SNOW COVER MEASUREMENTS 1959 Past Record											
			7.4.		7.7 . 4				Total		
DRAINAGE BASIN AND			Date of	Snow Depth	Water Content	Water	Conten	t (In.) 15-Year	Years of		
SNOW COURSE	No.	Elev.	Survey	(In.)	(In.)	1958	1957	Average 1938-52	Record		
LOWER YELLOWSTONE	(Tongue I	River)									
Beaver-Tongue Div. Big Goose #2 Bone-Spring Div. Burgess R.S. #2 Dome Lake #2 Gloom Creek Granite Pass North Tongue Sibley Lake Steamboat Point Sucker Creek Wood Rock G.S.	7E20 7E32 7E18 7E33 7E34 7E14 7E17 7E15 7E11 7E10 7E12 7E13	9200 7700 9200 7900 8800 9300 8950 8800 8000 7500 9000 8500	1/26 1/30 1/29 1/27 1/30 1/28 1/29 1/27 1/26 1/26 1/28	58 25 50 27 30 37 47 39 33 26 37	17.3 5.9 13.4 7.0 7.5 10.3 12.9 11.0 8.6 6.3 10.2 8.5	7.8 3.7 3.8 4.8 6.4 7.R. 53.4 4.9	11.2 4.4 9.9 4.0 6.9 10.2 4.4 5.4 6.0	-	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,		
LOWER YELLOWSTONE	(Powder B	River)							4-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1		
Muddy Creek G.S. Munkres Pass Onion Gulch Soldier Park Sour Dough	7E28 7E8 7E27 7E5 7E6	7500 9700 8100 8700 8500	2/1 2/1 2/1 2/1 2/2	15 33 31 20 24	3.9 8.8 7.6 4.6 5.5	2.3 5.4 5.0 3.0 3.8	2.2 6.0 6.4 1.6 3.8	- - 2.9**	3 4 3 7 3		

^{**} Average for period of record.



					CMOM C	OTTED V	TO A CITE TO	CENTIL C	~
COLUMBIA			-	1959	DIVOW C		<u>ŒASUREM</u> Past Rec		Total
DRAINAGE BASIN			Date	Snow	Water			nt (In.)	Years
AND			of					-15-Year	of
SNOW COURSE	No.	Elev.	Survey	(In.)		1958	1957	Average 1938-52	Record
KOOTENAI RIVER (ab	ove Lib	by, Mor	rtana)						
Fernie Gray Creek Marble Canyon Nelson Creek New Fernie Sullivan Mine	Can Can Can Can Can	3500 5100 5000 3050 4100 5100	1/30 1/28 1/30 1/28 1/30 1/29	23 50 52 45 46 45	5.7 11.4 11.9 11.2 11.9 9.6	6.8 9.3 9.5 13.1 10.7 8.9	7.3 12.2 13.7 10.5 10.9 8.2	6.6* 12.6** 11.5** 10.0* 11.5** 10.0**	19 10 11 20 8 13
FLATHEAD RIVER									
Basin Creek Coyote Hill Desert Mountain Holbrook Marias Pass Spotted Bear Mt. Trout Lake Twin Creeks	13B14A 13B10 13A2M 13B13A 13A5 13B2M 13A12M 13B11	4200 5600 4530 5250 7000	1/27 2/2 1/30 1/27 1/30 2/3 2/4 2/4	23 35 51 31 52 50 51 43	5.2 8.8 13.1 8.2 14.6 13.6 13.4 11.6	5.9 8.2 8.2 6.4 10.8 7.7 9.1 7.1	3.4 7.4 9.1 4.9 12.2 9.1 8.0 7.3	7.1** 7.3** 10.1** 7.4** 11.8 9.0** 11.1** 8.6**	8 12 12 8 24 3 6 8
CLARK FORK									
Chessman Res. Coyote Hill Fish Lake Airstrip Intergaard Lubrecht For. #6 Picnic Grounds Pipestone Pass Southern Cross Storm Lake #2 Stuart Mill Tenmile, Lower Tenmile, Middle Tenmile, Upper TV Mountain #Lookout	1205 13B10 1502 13C4 13C8 12C6 12D1 13C5 13C7 13C6 12C2 12C3 12C4 14B1 15B2	6200 4200 5000 6450 5400 6500 7200 6500 6500 6250 6800 6800 5250	1/29 2/2 1/31 2/2 2/2 2/2 2/2 2/2 2/3 2/2 2/1 2/1 1/31 2/2 1/30	11 35 93 19 13 11 12 13 36 15 20 32 40 62 91	2.3 8.8 25.9 4.2 3.0 1.7 2.2 2.7 8.8 3.7 4.6 7.8 10.6 15.2 27.2	2.3 8.2 27.6 3.2 4.2 7.4 3.6 8.6 26.6	1.2 7.4 23.5 3.8 3.5 3.8 3.0 7.6 4.4 5.7 11.2 19.7	3.3 7.3** 26.2** 5.1** 3.3** 3.4** 2.9* 4.1** 8.4** 4.8 7.0 8.8 10.9** 22.4	23 11 7 14 7 14 19 14 6 14 23 24 21 21 2
BITTERROOT Gibbons Pass #Moose Creek	13D2 13D16	7100 6200	1/30 1/28	55 43		14.4	14.8 11.2	15.2* 11.8**	19

^{**} Less than 15 years in 1938-52 period. Average for 15 years nearest the base period.

** Average for period of record.

Adjacent Basin.



STATUS OF RESERVOIR STORAGE February, 1959

BASIN		USABLE	USAF	LE STORAG	E - 1.000	ACRE FEET	
&		CAPACITY				1938-52	
STREAM	RESERVOIR	1000 A.F.	1959	1958	1957	AVG.	YRS.
MISSOURI RIVER BA	ASIN - MONTANA						
Beaverhead Madison River Madison River Hyalite Creek Missouri River Missouri River	·Lima Hebgen Lake Ennis Lake Middle Creek Canyon Ferry Hauser Lake	84.0 345.0 41.0 8.0 2043.0	32.2 168.2 38.5 4.2 1699.0	26.7 157.4 34.8 3.7 1575.0	6.4 158.1 38.4 3.1 1488.0	64.5* 234.7 34.0 3.6** 1332.0**	18 23 23 7 5
Missouri River Missouri River N.Fk. Sun River N.Fk. Sun River N.Fk. Sun River Marias River Birch Creek Dupuyer & Birch Judith River Missouri River Milk River Milk River W. Rosebud Cr. Tongue River Swiftcurrent Cr.	& Lake Helena Lake Helena Holter Lake Gibson Willow Creek Pishkun Tiber Swift Lake Francis Ackley Lake Ft. Peck 3/ Fresno Nelson Mystic Lake Tongue River Sherburne Lake	62.5 10.4 81.9 105.0 32.3 32.0 1316.0 30.0 112.0 5.8 19410.0 127.2 66.8 20.8 73.9 66.1	8909.0 29.3 42.5 11.4 15.4 34.2	59.0 9.2 76.7 29.0 19.8 12.3 625.2 19.0 94.2 4.6 7748.0 55.9 49.8 7.4 9.0 21.0	62.5 10.4 78.8 39.6 23.4 16.5 630.7 23.7 90.0 3.7 6019.0 75.1 51.4 6.0 10.8 18.8	46.2* 8.3** 53.3 59.6 12.9 15.6 - 19.5 72.8 4.2* 11240.0* 56.2* 28.5 8.0 10.0* 19.0	19 13 21 23 23 23 23 20 18 18 23 23 18 23
MISSOURI RIVER BA	SIN - WYOMING						
Shoshone River Wind River Wind River Bull Creek Belle Fourche	Buffalo Bill Boysen Pilot Butte Bull Lake Key Hole	440.0 408.6AC 31.6 152.0 190.0AC	6.3 56.3	161.9 249.1 15.9 66.5 1.9	128.2 220.0 14.3 67.8 14.1	264.5 260.3** 14.5 66.7* 13.3**	2l ₄ 7 23 19 6

^{*} Less than 15 years in 1938-52 period. Average for 15 years nearest the base period.

^{**} Average for period of record.

3/ Gross contents: Usable capacity less 617.0 A.F; minimum power pool 4,500 A.F.

AC Active capacity; USBR Billings.



STATUS OF RESERVOIR STORAGE February, 1959

BASIN		USABLE	USAB	LE STORAG	E - 1000 A		
& STREAM	RESERVOIR	CAPACITY 1000 A.F.	1959	1958	1957	1938-52 AVG.	YRS.
MISSOURI RIVER B	ASIN - NORTH DAK	OTA					
Heart River Heart River Missouri River James River	Heart Butte Dickinson Garrison Lk. Jamestown	54.8AC 4.3AC 13805.0AC 20.0AC	42.9 3.7 2679.4 12.5	53.3 4.2 4448.0 10.4	43.7 3.2 535.2 4.7	53.4** 3.8**	8 8 4 2
MISSOURI RIVER E	BASIN - SOUTH DAK	OTA					
Belle Fourche Cheyenne River Cheyenne River Grand River Missouri River Missouri River Missouri River Cheyenne River	Belle Fourche Angostura Deerfield Shadehill Ft. Randall Gavins Point Oahe Pactola	185.0AC 160.0AC 15.1AC 84.0AC 4900.0AC 385.0AC	32.0 46.4 8.6 71.4 1986.2 316.1 0 18.4	66.0 55.9 11.3 79.4 1552.0 325.1	37.0 27.8 8.2 133.4 1091.0 189.7	11.3** 134.4**	33554202
COLUMBIA RIVER B	BASIN - MONTANA						
Flint Creek S.Fk. Flathead Flathead River Flathead River 6 Flathead River 7		3500.0 1791.0 42.8	28.3 2956.0 1194.0 23.7 28.7	19.9 2088.0 873.0 26.0 19.7	19.2 1802.0 850.0 30.0 28.5	22.9* 2199.0** 679.0 21.1* 36.8*	19 5 15 18 18

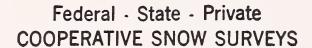
** Average for period of record.

AC Active capacity; USBR Billings.

^{*} Less than 15 years in 1938-52 period. Average for 15 years nearest the base period.

^{6/} Camas Reservoirs are shown as a sum of (4) small reservoirs on the west side of Flathead Lake located on Dry Creek and Little Bitterroot River.

^{7/} Mission Valley Reservoirs are shown as a sum of (8) small reservoirs located south and east of Flathead Lake. Both Camas and Mission Valley reservoirs are operated by the Indian Irrigation Service.



Furnishes the basic data necessary for forecasting water supply for irrigation, domestic and municipal water supply, hydro-electric power generation, navigation, mining and industry

"The Conservation of Water begins with the Snow Survey"